Abstract of the Disclosure

ENGINE VALVE ACTUATOR PROVIDING MILLER CYCLE BENEFITS

An engine valve actuator providing Miller cycle benefits and a method of operating an engine valve actuator are disclosed. The valve actuator employs a first force to hold an exhaust valve of the engine open during an exhaust stroke and a second, stronger force to hold the exhaust valve open during a compression stroke. The valve actuator may be operated using pressurized fluid adapted to extend an actuator piston through a cylinder. The first force may be derived by a mechanically driven actuator, while the second force may be derived from a high pressure rail of the engine. A low pressure source of the engine may be used to fill the actuator cylinder, with the high pressure rail only being placed into fluid communication with the cylinder when desired. A control valve may be employed to direct either the low pressure or high pressure fluid to the valve actuator cylinder.